federal register

WEDNESDAY, MARCH 21, 1979

PART V

ENVIRONMENTAL PROTECTION AGENCY

■

IRON AND STEEL PLANTS, BASIC OXYGEN FURNACES

Standards Review

[6560-01-M]

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 60]

[FRL 1012-1]

STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES: IRON AND STEEL PLANTS, BASIC OXYGEN FURNACES

Review of Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Review of standards.

SUMMARY: EPA has reviewed the standards of performance for basic oxygen process furnaces (BOPFs) used at iron and steel plants. The review is required under the Clean Air Act, as amended in August 1977. The purpose of this notice is to announce EPA's intent to propose amendments to the standards at a later date.

DATES: Comments must be received by May 21, 1979.

ADDRESS: Send comments to: Mr. Don Goodwin (MD-13), Emission Standards and Engineering Division, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

FOR FURTHER INFORMATION CONTACT:

Mr. Robert Ajax, telephone: (919) 541-5271.

The document "A Review of Standards of Performance of New Stationary Sources—Iron and Steel Plants/Bassic Oxygen Furnaces" (report number EPA-450/3-78-116) is available upon request from Mr. Robert Ajax (MD-13), Emission Standards and Engineering Division, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

SUPPLEMENTARY INFORMATION:

Background

Particulate matter emissions from BOPFs fall in two categories, primary and secondary. Emissions associated with the oxygen blow portion of the BOPF are termed "primary" emissions. These emissions are generated at the rate of 25 to 28 kg/Mg (50 to 55 lb/ton) of raw steel. Emissions generated during ancillary operations, such as charging and tapping, are termed "secondary" or fugitive emissions. These emissions are generated at a lower rate in the range of 0.5 to 1 kg/Mg (1 to 2 lb/ton) of raw steel.

In June of 1973, EPA proposed a regulation under Section 111 of the Clean Air Act to control primary particulate emissions from basic oxygen process furnaces at iron and steel plants. The regulation, promulgated in March 1974, requires that no owner or operator of any furnace producing steel by charging scrap steel, hot metal, and flux materials into a vessel and introducing a high volume of an oxygen-rich gas shall discharge into the atmosphere any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

The Clean Air Act Amendments of 1977 require that the Administrator of the EPA review and, if appropriate, revise established standards of performance for new stationary sources at least every 4 years (Section 111(b)(1)(B)). This notice announces that EPA has completed a review of the standard of performance for basic oxygen process furnaces at iron and steel plants and invites comment on the results of this review.

Findings

Industry Growth Rate

The present economic conditions in the United States and worldwide steel industry have created a significant excess U.S. BOPF capacity and a tightening of the availablitly of capital for future expansion. Since the promulgation of the BOPF standard, new BOPF construction has declined significantly. For example, three of the four units scheduled for startup in 1978 were originally scheduled to begin production in 1974. This coupled with the lack of any additional industry announcements of new U.S. BOPF contruction, indicates that construction of new BOPFs which would be subject to a revised new source performance standard (NSPS) is not likely to commence before 1980, if then. Construction of new plants beyond 1980 will be dictated by domestic economic conditions and international competition, and is, therefore, uncertain.

Primary Emission Control

Review of the literature and performance test data indicates that the use of a closed hood in conjunction with a scrubber or an open hood in conjunction with either a scrubber or electrostatic precipitator currently represents the best demonstrated control technologies for controlling BOPF primary emissions. All BOPFs that have been installed since 1973 incorporate closed hood systems for particulate emission control. The closed hood control system in combination with a venturi scrubber has become the system of choice of the U.S. steel industry because this system saves energy and has generally lower maintenance requirements compared with the older open-hood electrostatic precipitator system. Use of the closed hood system requires that approximately 80 percent less air be cleaned than with the open hood system. The potential also exists with the closed hood system for using the carbon monoxide off-gas as a fuel source.

As of early 1978, no NSPS compliance tests had been carried out since the promulgation of the standard. Pertinent data are available, however, from emission tests on a limited number of new BOPFs. These tests, carried out using EPA Method 5, indicate that primary particulate emission levels of between 32 and 50 mg/dscf (0.014 and 0.022 gr/dscf) are being achieved using the same control technology as that existing at the time the standard for primary emissions was established for BOPFs. The rationale for the current NSPS level of 50 mg/dscm (0.022 gr/dscf) for primary stack emissions, as described in 1973, is therefore, still considered to be valid.

Secondary Emission Control Technology

Secondary or fugitive emissions not captured by the BOPF primary emissions control system during various BOPF ancillary operations currently amount to more than 100 tons annually. One of the principal sources of these emissions, the hot metal charging cycle, can generate amounts of fugitive emissions on the order of 0.25 kg/Mg (0.5 lb/ton) of charge. These emissions are presently uncontrolled in most of the older BOPFs and only partially controlled in most BOPFs that have come on stream during the past 5 years.

Control of secondary emissions involves a developing technology that requires in-depth study to determine the most effective methods of fume capture. Although potentially expensive to construct, the complete furnace enclusure equipped with several auxiliary hoods is currently the only demonstrated technology exhibiting the potential for effectively minimizing fugitive emissions from a new BOPF.

Seven new BOPFs installed in the U.S. in the past 7 years have incorporated partial or full furnace enclosures as part of the original particulate emission control system. Since these designs had deficiencies, these systems are operating with varying degrees of success. Six new furnace enclosure installations due to commence operations in 1978, including four on new BOPFs and two retrofit installations, will incorporate a secondary hood inside the furnace enclosure with sufficient volume for fugitive emission control.

Clarification of Wording of NSPS Standard

Review of the existing standard revealed possible ambiguity in the wording of the NSPS with regard to the

definitions of a BOPF. Also, the definition of the operating cycle during which sampling is performed requires clarification. Specifically, the stack emissions averaged over the oxygen blow part of the cycle could be significantly different from the emissions averaged over a period or periods that includes scrap preheating and turndown for vessel sampling. The current standard is unclear as to which averaging time should be used. Since no tests to date have come under the NSPS, averaging time has not been an issue; however, interpreting the standard will be a problem until this matter is resolved.

Conclusions

Based upon the above findings, the following conclusions have been reached by EPA:

(1) The best demonstrated systems of emissions control at the time the standard for primary emissions was established for BOPF have not changed in the past 5 years. (See APTD-1352c (EPA/2-74-003), Background Information for New Source Performance Standards, Volume 3, Promulgated Standards.) These technologies control emissions to a level consistent with the current standard; therefore, revision to the existing standard is not required, if only primary emissions are to be controlled.

(2) Secondary or fugitive emissions from BOPFs represent a major air pollution emission source. EPA, therefore, intends to initiate a project to revise the existing standard of performance to include fugitive emissions. This development project is planned to begin during 1979 and lead to a proposal 20 months after initiation. In addition, an assessment of foreign technology, which ahs been initiated by the Agency, will be included in the basis for the revised standard. The assessment may lead to further conclusions about the allowable emissions from the primary gas cleaning stack due to the interdependence of primary and secondary control technologies.

(3) The ambiguities in the present standard concerning definition of a BOPF and the operating cycle to be measured should be clarified, and a project to do so has been initiated.

Public Participation

All interested persons are invited to comment on this review, the conclusions, and EPA's planned action. Comments should be submitted to: Mr. Don Goodwin (MD-13), Emission Standards and Engineering Division, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

Dated: March 9, 1979.

Barbara Blum,
Acting Administrator.

[FR Doc. 79-8360 Filed 3-20-79; 8:45 am]